

ABSTRACT

AD conversion is rapidly carried out with a low load, and high-quality digital image signals are output by 5 simultaneous AD conversion, without increasing the sizes of a pixel array and an optical system.

A pixel array (110) includes pixels (111) each including a photoelectric transducer and pixel transistors and outputs analog pixel signals. An AD memory (130) 10 includes unit memories (131) in a two-dimensional array corresponding to a pixel arrangement in the pixel array (110), sequentially stores the analog pixel signals read through vertical signal lines, and carries out various types of processes, for example, AD conversion, fixed-pattern 15 noise removal by CDS, and gain adjustment. AD converter circuits (132) are provided for the respective unit memories (131) in the AD memory (130). The AD converter circuits (132) convert the analog pixel signals read from the individual pixels to digital pixel signals.